

REMARKS

This is intended as a full and complete response to the Office Action dated October 29, 2007, having a shortened statutory period for response set to expire on January 29, 2008. Claims 1, 6, 9, 14 and 16 have been amended and new claim 18 has been added to more clearly recite various aspects of the claimed invention. No new matter has been presented by the amendment made herein. The amendments have been made in a good faith effort to advance prosecution on the merits. Please reconsider the claims pending in the application for reasons discussed below.

Claim 16 stands rejected under 35 USC 101 and 112, second paragraph. In response, the preamble of claim 16 has been amended to “a computer-readable medium having stored thereon computer-executable instructions which, when executed by a computer, cause the computer to.” Withdrawal of the rejection is respectfully requested.

Claims 1-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over US Patent No. 4,992,995 (“Favret”) in view of US Patent No. 6,651,007 (“Ozbek”). The Examiner takes the position that Favret at column 5, lines 8-28 and column 2, lines 21-24, discloses determining a prediction filter from seismic data at a first frequency at which swell noise is not present and applying the prediction filter to seismic data at a second frequency where swell noise is present to thereby attenuate the swell noise in the seismic data at the second frequency. The Examiner admits, however, that Favret does not specifically teach attenuating swell noise. Rather, Favret proposes attenuating coherent and random noise. The Examiner attempts to supplement this missing limitation with Ozbek. More specifically, the Examiner takes the position that Ozbek (Abstract) teaches that coherent noise includes swell noise.

Claims 1, 6, 9, 14 and 16 have been amended to include “wherein the second frequency is different from the first frequency.” Support for such amendment can be found throughout the specification, including column [0033]-[0041]. Favret is generally directed to methods for attenuating noise in seismic data. More specifically, the seismic data are first sorted into gathers of seismic signals. Selected coherent events in each gather are then aligned and the balance of the coherent events in each gather are transformed into incoherent events. A two dimensional filter is then applied to the

gathers to attenuate the incoherent events. In one embodiment, the aligned coherent events include primary reflection events. In another embodiment, the coherent events include coherent noise, such as multiple reflection events, ground roll, refractions and direct arrivals. (See column 2, lines 27-47). The Favret method employs statistical advantages of stochastically sorting the gathers. The stochastic sorting transforms dipping multiple reflection events into incoherent events and thus nonpredictable, while the primary reflection events remain coherent and thus predictable. By applying the two dimensional filter to the stochastically sorted seismic signals, coherent events can be passed and random events can be attenuated. (See column 3, lines 22-30).

However, Favret does not teach or disclose determining a prediction filter from the seismic data at a first frequency at which swell noise is not present; and applying the prediction filter to seismic data at a second frequency at which swell noise is present, thereby to attenuate swell noise in the seismic data at the second frequency, wherein the second frequency is different from the first frequency. In contrast, Favret makes no mention of the different frequencies for determining the prediction filter and for applying the prediction filter. As the Examiner mentions, Favret also does not teach attenuating swell noise.

Ozbek is generally directed to adaptive seismic noise and interference attenuation method. However, like Favret, Ozbek also does not teach or disclose determining a prediction filter at one frequency and applying the prediction filter at another frequency. Accordingly, claims 1, 6, 9, 14 and 16 are patentable over Favret and Ozbek. Claims 2-5, 7-8, 10-13 and 15 are also patentable over Favret and Ozbek since they depend from claims 1, 6, 9 and 14, respectively. Withdrawal of the rejection is respectfully requested.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed invention. Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

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